

*Architects, Biomedical Engineers, Astronomers, Veterinary Technicians, Statisticians, Computer Programmer, these are just a few of the many exciting occupations that use scientific notation! In this unit we will uncover the meaning behind this new language. Beginning with a study of the key component to understand scientific notation – exponents, and ending with an exploratory look at its real word applications. Google Earth, collaborative challenges, and iMovie will be just some of the cool tools we will utilize in order to guide us on our mathematical journey.*

*RSU#9*

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*Scientific notation*

*Mathematics*

*Grade 8*

*Integer Exponents & Scientific Notation*

*• exponents can be used to express numerical values in different, but equivalent, ways*

*• scientific notation is used/can be used to represent large and small quantities.*

*• scientific notation has real-world applications*

*• demonstrate how to convert numbers expressed as decimals to scientific notation and vice-versa.  
• represent large and small quantities using scientific notation.  
• solve problems involving scientific notation.  
• analyze data that contains scientific notation.  
• relate real numbers to their exponential form  
• recognize when, and how, to use the properties of exponents.*

*• Definitions: Exponents, scientific notation, powers, standard notation,  
decimals, integers  
• Critical Details: Properties of exponents, place value, negative, exponents,  
scientific notation operations, magnitude, measurements and units.  
• Applications: Real world use of scientific notation, problem solving strategies, data analysis, finding rates.*

*• How can we use exponents to express numerical values in different, but equivalent, ways?*

*• How and why is scientific notation used to represent very large or very small values?*

*• How is scientific notation applied in the real world?*

*3. Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is smaller than the other. For example, estimate the population of the United States as 3 x 10^8 and the population of the world as 7 x 10^9, and determine that the world population is more than 20 times larger.*

*SDSD  
4. Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology.*

*1: Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, 3^2 x 3^-5 = 3^-3 = 1/3^3 = 1/27*

***Common Core State Standards******Content Area:*** *Mathematics****Grade Level:*** *Grade 8****Domain:*** *Expressions and Equations****Cluster:*** *Work with radicals and*

*integer exponents.****Standard:*** *1, 3, 4*

***By what criteria will student products/performances be evaluated?***



* 1. *(W) Scientific Notation*

*3.2 (H) Calculator*

* 1. *(E) TickTackToe*
  2. *(R) Teacher Feedback*

*3.5 (E) Self, Teacher*

*3.7 (O) Interpret, 2 days*

* 1. *(W) Scientific Notation (RW)*
  2. *(H) Universe*
  3. *(E) ISP Chart*
  4. *(R) Self, Teacher*
  5. *(E) Checklist*

*6.7 (O) Perspective, 3 days*

*5.1 (W) Scientific Notation (RW)*

* 1. *(H) Video*
  2. *(E) Ladder*
  3. *(R) Checklist*

*5.5 (E) Self, Peer, Teacher*

*5.7 (O) Explain, 2 days*

* 1. *(W) Scientific Notation*
  2. *(H) Shortcuts*
  3. *(E) Inverted Triangle*

*4.4 (R) Checklist*

*4.5 (E) Self, Peer, Teacher*

*4.7 O) Apply, 3 days*

*2.1 (W) Exponents*

*2.2(H) Video/Math Detective*

* 1. *(E) Step-by-step*
  2. *(R) Checklist*
  3. *(E) Self, Peer*

*2.7 (O) Empathy, 3 days*

* 1. *(W) Exponents*
  2. *(H) Video*
  3. *(E) Flowchart*
  4. *(R) Checklist*
  5. *(E) Self, Peer Teacher*

*1.7 (O) Self-Knowledge, 3 days*